



PATENT
1422-0508P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Kazuo IWAI Conf.: 3472
Appl. No.: 10/006,569 Group: 3643
Filed: December 10, 2001 Examiner: J. Olszewski
For: METHOD OF STERILIZING POULTRY MEAT

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Sub
Decl
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Holmes

DECLARATION UNDER 37 C.F.R. §1.132

Assistant Commissioner of Patents
WASHINGTON, D.C. 20231

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Sir:

I, Kazuo IWAI, residing at Yasu-gun, Shiga, Japan, hereby declares and states as follows:

1. That I am the sole inventor of U.S. Patent Application Serial No. 10/006,569 filed on December 10, 2001. I am thoroughly familiar with the contents of said Application, its prosecution before the United States Patent and Trademark Office and the references cited therein.
2. That I have been the representative for JCS Inc. since the year 1998.
3. That I have been engaged in the studies of hinokitiol.
4. That the following experiments were conducted by myself or under my direct supervision and control in order to demonstrate that sterilization of poultry meat by subjecting the meat to a contact treatment with an aqueous hinokitiol solution does not affect the meat color or the taste of meat.

EXPERIMENTS

- I. Influence on Meat Color

The surface color of chicken breast meat, which had been raw or roasted, after the contact treatment with an aqueous hinokitiol solution was determined with a color-difference meter (CR-13, manufactured by MINOLTA CO., LTD.). An evaluation was made on the influence on meat color by comparing the meat subjected to a contact treatment with an aqueous hinokitiol solution, with the meat without the contact treatment with an aqueous hinokitiol solution (control).

The chicken breast meat was subjected to a contact treatment with the aqueous hinokitiol solution as follows. Specifically, 300 g of chicken breast meat was immersed at 10°C in 1 L of ion-exchanged water (control) or in 1 L of an aqueous hinokitiol solution (pH 6.5) containing 125 ppm or 1000 ppm hinokitiol, and the water or solution was stirred by a hand with a sterilized glove for 5 minutes.

Next, the chicken breast meat was drained for 1 minute. The surface color of the meat was determined by using a color reader. In addition, the surface color of the meat which had been roasted on a hot plate at 230°C for 10 minutes was determined in the same manner as above. The results are expressed by using standard color coordinates according to Lab color indication.

Incidentally, in Tables I and II, the values for L, a and b are values of each of the coordinates obtained by applying the determination results of the meat color to the standard color coordinates. ΔE represents quantitative difference in color (color difference) between the samples, and the values for ΔE are obtained by the following equation:

$$\Delta E = [(\Delta L)^2 + (\Delta a)^2 + (\Delta b)^2]^{1/2},$$

wherein ΔL , Δa and Δb are differences in the values of L, a and b between the samples, respectively.

Since a sensory expression showing the difference in color is assigned to the values of ΔE as given below, the difference can be quantitatively expressed on the basis of the value for ΔE .

Sensory Expression	ΔE (NBS units)
Trace color difference	0-0.5
Slight color difference	0.5-1.5
Noticeable color difference	1.5-3.0
Appreciable color difference	3.0-6.0
Much color difference	6.0-12.0
Very much color difference	12.0 or more

The above procedures were carried out for three different chicken meat for each case.

II. Influence on Taste of Meat

A sensory test was carried out on roasted chicken breast meat which had been treated in the same manner as that for the evaluation of the influence on the meat color of the chicken breast meat. The evaluation was made on the influence on the taste of meat by comparing the meat subjected to a contact treatment with an aqueous hinokitiol solution with the meat without the contact treatment with an aqueous hinokitiol solution (control).

The sensory test was carried out by a standard triangle test. This test comprises two independent tests: In one test, two pieces of control chicken meat and one piece of chicken breast meat subjected to a contact treatment with an aqueous hinokitiol solution were eaten, and compared among them; in the other

test, two pieces of chicken breast meat subjected to a contact treatment with an aqueous hinokitiol solution and one piece of control chicken meat were eaten, and compared among them. Six test panelists were subjected to the test once a day for three consecutive days for each of the cases where aqueous hinokitiol solutions were used at different concentrations, and such a test was carried out for a total of three times. In each test, the panelists judged whether or not the meat was the meat subjected to a contact treatment or the control meat on the basis of the evaluation criteria described in a literature (Amerine, M.A., Pangborn, R.M., and Roessler, E.B., "*Principles of Sensory Evaluation of Food*," Academic Press, New York, 1965, p. 357) (the panelists were not informed of how the meat was treated).

RESULTS

I. Influence on Meat Color

The determination results on the meat color evaluation are shown in Tables I and II as an average.

Table I

	Contact Treatment	L	a	b	ΔE
Raw Chicken Breast Meat	Control (ion-exchanged water)	43.5	1.8	3.3	—
	Aqueous Hinokitiol Solution (125 ppm)	42.8	1.1	2.7	1.16
Roasted Chicken Breast Meat	Control (ion-exchanged water)	78.6	1.6	12.5	—
	Aqueous Hinokitiol Solution (125 ppm)	77.9	1.7	12.4	0.71

Table II

	Contact Treatment	L	a	b	ΔE
Raw Chicken Breast Meat	Control (ion-exchanged water)	40.5	2	4.1	–
	Aqueous Hinokitiol Solution (1000 ppm)	40.9	0.8	3.8	1.30
Roasted Chicken Breast Meat	Control (ion-exchanged water)	80.3	2.3	11.5	–
	Aqueous Hinokitiol Solution (1000 ppm)	81.6	1.7	11.6	1.44

II. Influence on Taste of Meat

All of the judgment results for 3 days for all panelists are tabulated and shown in Table III for each of correct judgments and incorrect judgments, expressed as the total number of panelists conducting each judgment.

Table III

Chicken Breast Meat	Correct Judgment	Incorrect Judgment
Two pieces of control (ion-exchanged water) meat and one piece of meat treated with aqueous hinokitiol solution (125 ppm)	9	9
One piece of control (ion-exchanged water) meat and two pieces of meat treated with aqueous hinokitiol solution (125 ppm)	4	14
Two pieces of control (ion-exchanged water) meat and one piece of meat treated with aqueous hinokitiol solution (1000 ppm)	5	13
One piece of control (ion-exchanged water) meat and two pieces of meat treated with aqueous hinokitiol solution (1000 ppm)	9	9

DISCUSSION

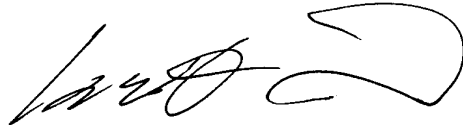
As shown in Tables I and II, when the chicken breast meat subjected to a contact treatment with an aqueous hinokitiol solution is compared to that of the control, the ΔE (color difference) is 1.5 or less therebetween for all the cases. When the ΔE is less than 1.5, the color difference cannot be visually detected by human senses, so that it can be seen that the contact treatment of the chicken breast meat with an aqueous hinokitiol solution does not substantially affect the meat color.

Also, a significance test was carried out by comparing the correct judgments and the incorrect judgments on the bases of the results shown in Table III. As a result, there was no significant difference. Accordingly, it can be said that each panelist could not distinguish the chicken breast meat subjected to the contact treatment with an aqueous hinokitiol solution from the control chicken meat in any of the cases. Therefore, it can be seen that the contact treatment of the aqueous hinokitiol solution to the chicken breast meat does not substantially affect the taste of meat.

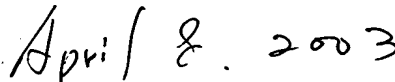
5. As can be seen from the experiments, the color and flavor of sterilized poultry meat do not change with the present invention. With regard to U.S. Patent Nos. 5,632,676 and 6,165,964, these effects of the present invention are unexpected.

6. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

7. Further declarant saith not.



Kazuo IWAI



Date